

ATF Status Report for October, 2007

19 November 2007

Management:

ALMA Test Facility detailed planning

(<http://almasw.hq.eso.org/almasw/pub/ATF/WebHome>) contains

- ATF long term planning – steps leading to major observatory goals as a function of time.
- ATF roster – a support roster to track who will be available for support from CIPT, PSI, Sci IPT, BE IPT, Ant IPT and others.
- Google spreadsheet – a daily schedule of events showing what is happening each day, who is responsible, and who in the Sci IPT is at the ATF. The ATF activities are negotiated every Thursday by PSI and CIPT (with Sci IPT inputs) for the following week.

Daily activities and downtime log are tracked in the ATF journal, again available on the ATF twiki.

Major Accomplishments:

Steady progress has been made to achieve dynamic fringes at the ATF. Delay software was inserted and tested to correct for geometric delays and on-sky delays. On 19 October coherent fringes were obtained on Jupiter and 2 quasars using automatically generated geometric delays (single sample delays in the correlator and sub-sample delays in the digitizer clock were auto-adjusted). Bulk delays in the correlator were still required at that time. There was a residual fringe rate of 9deg/s – the residual fringe rate needs to be about 0.5deg/s (30deg/min) to do interferometric pointing. This may be a baseline error or a software error and must be tracked down once the Vertex antenna is back in service.

Progress toward dynamic interferometric fringes was delayed for more than 2 weeks due to the scheduled repair of the Vertex quadrupod joint in the last 2 weeks of October. The joint was successfully repaired. Final curing of the epoxy and recovery of the antenna to full science operations will take place in early November.

Issues/Concerns:

Staffing to support hardware maintenance and troubleshooting/fixing hardware-related problems may become an issue beginning in January 2008 when critical PSI support staff are expected to move to Chile. D. Shepherd, B. Glendenning and E. DuVall have been discussing the issues. D. Shepherd will estimate the level of support needed (based on past history) and compare this against projected FTE estimates and available expertise. The results of this study will be provided in the ATF status report for November.

ATF Viability:

During the past month the ATF has supported:

- Critical software development for radiometric pointing and dynamic fringes,
- Antenna repair and subsequent failure analysis for AIV, and
- The development of commissioning procedures for the Science IPT.

While it is still a bit early to determine if the ATF should remain open until 1 June 2008, it is clear that the ATF is, at this moment, valuable to software development, hardware verification and commissioning. Individual reports from the Computing IPT, AIV and the Science IPT discuss the usefulness of the ATF from their perspective.

ATF efficiency:

The cumulative number of hours in which the ATF was used during September and October is shown in Fig. 1. The total hours in use increased from 74% to almost 90% while down time due to hardware and software failures decreased. However, with the Vertex antenna out of commission for the feed-leg repair for more than 2 weeks, the usefulness of the active time was decreased (e.g. radiometric pointing models were repeated, Sci IPT members were trained, and PSI archival monitoring was scheduled rather than progressing on the higher priority goal of dynamic interferometry).

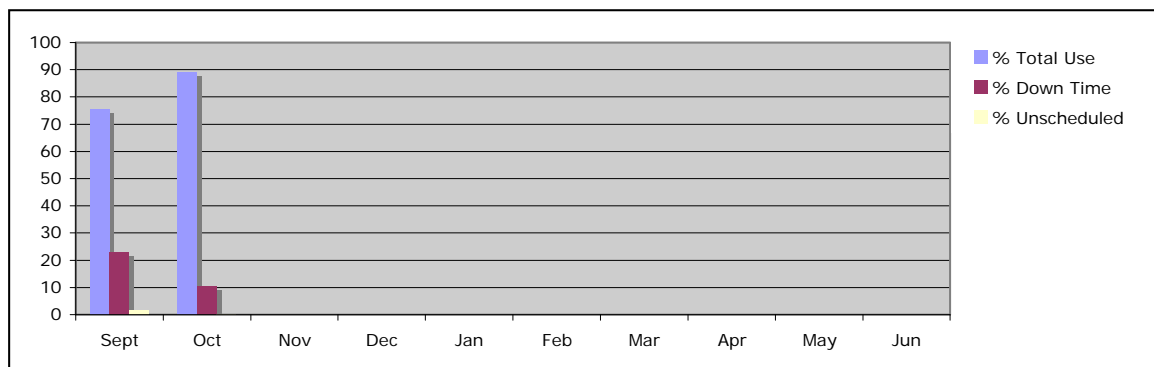


Figure 1: ATF efficiency – Monthly summary. Total Use (active use + passive use) versus down time due to software and hardware problems. Unscheduled time is also shown.

The detailed ATF usage per day is shown in Fig. 2 below. Roughly 59% of the time was used for active development (hardware and software) and science observations (interferometry or total power pointing), 30% of the time was used for passive data collection (archiving monitor points to troubleshoot hardware problems), 11% of the time was down time (due to software crashes, hardware failures, power outages or weather).

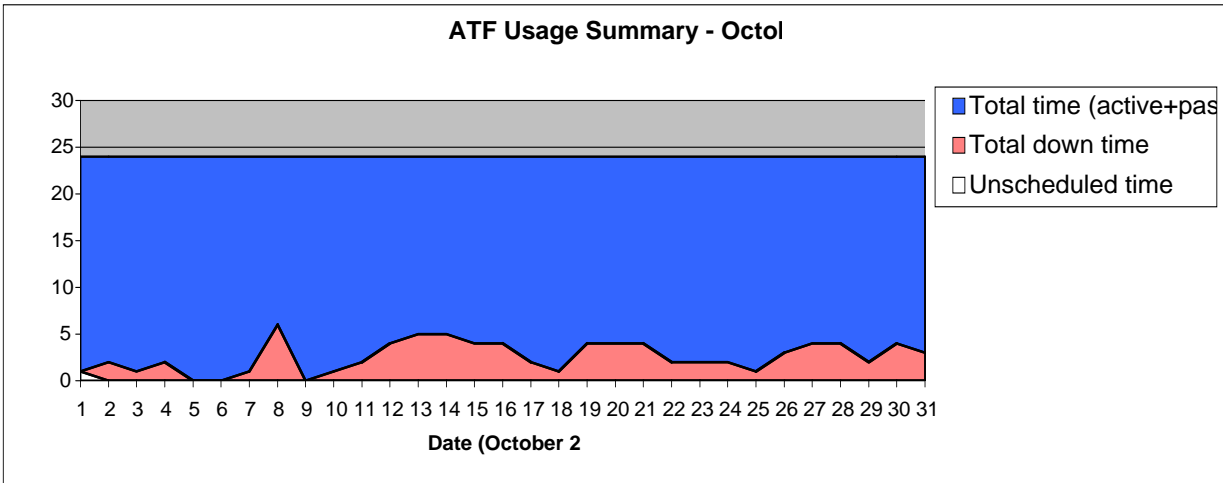
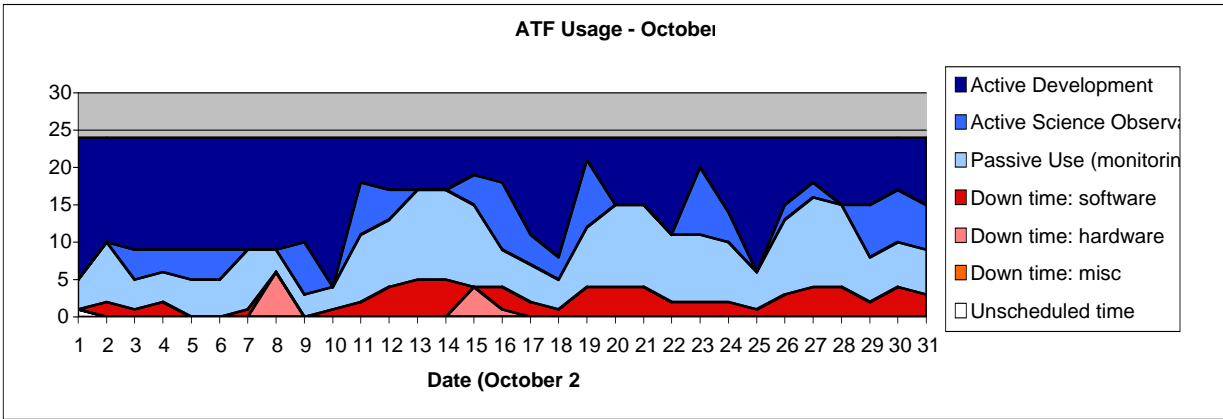


Figure: ATF Use for October 2007. Top: ATF use broken into the following categories: Active use (development time and science observations); Passive use (archival of monitoring data to troubleshoot hardware); Down time due to software, hardware and miscellaneous (weather, power outages) failures; and Unscheduled time. **Bottom:** ATF use broken into 3 categories: Total time in use (active + passive); Total down time; and Unscheduled time.

Appendix – Reports from ATF Stakeholders

Computing IPT:

The CIPT focus has been on dynamic interferometry. Real time calculation of delays for sidereal sources has been demonstrated, as has much of the hardware compensation. During the period of the Vertex feed-leg repair, progress on interferometry was stalled. This period was spent by the CIPT addressing a number of usability issues, and testing that the Optical Pointing and Holography observing modes were functional in the latest versions of the software. Other improvements introduced this month are an expansion of the alarm system to contain some of the key components of the LO chain, further use and testing of the Monitor database (although some key functionality is still missing).

Our focus remains on interferometry, and improving system robustness. We are pushing toward the production of ASDMs containing correlator data, and the analysis of this data with CASA.

Assembly, Integration & Verification:

No report from PSI/AIV available.

Science IPT/Commissioning:

Science IPT continues to provide support for the testing at the level agreed. Reid, Myers, Hunter, de Gregorio-Monsalvo and Carilli all did stints during the month of October. Since the Vertex antenna was not available for the later part of this period, the largest effort has been on radiometric pointing. The technique for doing this has been improved substantially during the month as a result of collaboration between Science and Computing.

Viability: All those involved from the Science side continue to regard the software testing at the ATF as critically important. As noted last time, reliability of both hardware and software is still a serious problem. The question of whether sufficient technical support will continue to be available into 2008 needs to be reviewed.

Concerns: Partly as a result of the concerns about the rate of progress expressed in the last report, a new coordinating group has been set up. It is of course too soon to see results from this